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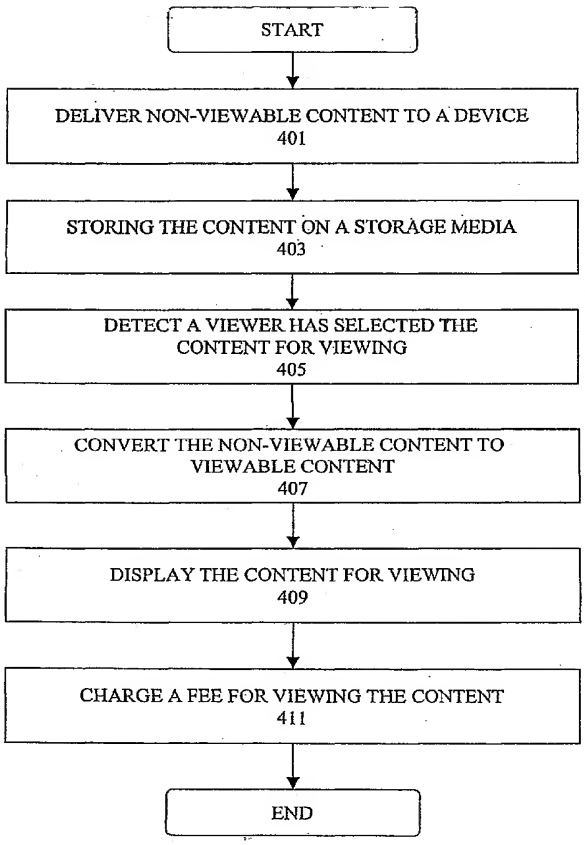
(54) Title: PAY PER VIEW ARCHITECTURE PROVIDING FOR LOCAL STORAGE OF CONTENT



(57) Abstract: A method of and apparatus for delivering content to a device (401) at a viewer's location, storing the content on a storage media (403) on the device, accepting viewer input to select the content for viewing (405) and, responsive to the viewer input (407), displaying the content for viewing (409) and charging the viewer a fee (411) for viewing the content.

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PAY PER VIEW ARCHITECTURE PROVIDING FOR LOCAL STORAGE OF CONTENT

BACKGROUND OF THE INVENTION

Video on demand and pay per view systems are well-known in the art. Typically, these systems provide for enabling viewers to request a particular movie title and serving the movie from a video server or the like. An example of such a prior art system is described in U.S. Patent Number 5,899,582 titled "Movie-on-demand disk storage loop architecture" (the '582 patent).

The '582 patent describes storage requirements for a single movie, dependent on picture quality, compression ratio and length of the movie ranging from 1 gigabyte (GB) to 3 GB. With the advent of HDTV, the '582 patent suggests that HDTV movies may require storage capacity of 33 GB per movie. The '582 patent further suggests that the described server may be targeted to initially support 1600 users with later systems providing support for 10,000 users per video server. The '582 patent states that supporting thousands of users with their diverse movie interests will require storage of hundreds, if not thousands of titles. Thus, total storage capacity of the proposed video servers will be relatively large—at least approaching the terabyte range.

Typically, in movie on demand systems, the viewer selects a movie for viewing, commits to payment for the movie, and the movie content is then delivered to the viewer. This general approach of obtaining authorization for payment before delivery of the movie is used whether the content is delivered from a video server over a network or whether the content is delivered in a

more manual approach by the viewer going to the video store, selecting a video, paying for it, and bringing it home for viewing. Even the so-called DIVX™ disk required payment at a retail outlet for the disk before it was brought home to be played.

Of course, obtaining the payment from the consumer before delivery of the movie makes sense because it assures payment is actually received. However, there is a downside. In the case of delivery of a movie over a network, there are difficulties in providing sufficient network bandwidth and other resources for delivery at the requested time. Requiring the viewer to go a retail outlet minimizes impulses purchases.

Thus, it would be desirable to develop an improved system for providing content (such as movies) to a user. It would be desirable if the improved method provides for payment by the user for the content while allowing for impulse purchases and while minimizing real-time demand for bandwidth.

SUMMARY OF THE INVENTION

A method of and apparatus for delivering content to a device at a viewer's location, storing the content on a storage media on the device, accepting viewer input to select the content for viewing and, responsive to the viewer input, displaying the content for viewing and charging the viewer a fee for viewing the content.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an overall network diagram of a network as may implement an embodiment of the present invention.

Figure 2 is a high level block diagram of a recording and playback device as may be implemented by an embodiment of the present invention.

Figure 3 is an illustration of a video sequence.

Figure 4 is an overall flow diagram illustrating a method as may be implemented by the present invention.

Figure 5 illustrates a remote control device as may be utilized with a video playback device.

Figure 6 is an exemplary display as may be utilized by an embodiment of the present invention.

For ease of reference, it might be pointed out that reference numerals in all of the accompanying drawings typically are in the form "drawing number" followed by two digits, xx; for example, reference numerals on Figure 1 may be numbered 1xx; on Figure 3, reference numerals may be numbered 3xx. In certain cases, a reference numeral may be introduced on one drawing and the same reference numeral may be utilized on other drawings to refer to the same item.

DETAILED DESCRIPTION OF THE EMBODIMENTS THE PRESENT INVENTION

Video Tape Recorders and Personal Television

The described invention has application in video playback devices such as conventional video tape recorders (VTRs) as well as emerging Personal Television (PTV) devices. Embodiments of a commercially available PTV are available as the Replay TV 2001, 2003 and 2004 personal television devices.

Embodiments of personal television devices are further described in co-pending U.S. Patent Applications:

Serial No.: 09/130,994 filed August 7, 1998 titled "Video Data Recorder with Integrated Channel Guides";

Serial No.: 09/131,092 filed August 7, 1998 titled "Video Data Recorder for Recording Predefined Format Shows";

Serial No.: 09/131,091 filed August 7, 1998 titled "Video Data Recorder with Personal Channels"; and

Serial No.: 09/262,144 filed March 3, 1999 titled "Digital Recording and Playback" which is a continuation of U.S. Patent Application Serial No.: 09/132,690 filed August 11, 1998;

all of which are incorporated herein by reference.

Figure 1 provides a high level illustration of a network as may implement the present invention. The illustrated network comprises a display device 102. In the described embodiment the display device 102 is a television; however, in alternative embodiments, the display device 102 may another type of device such as a monitor. The display device 102 is coupled to receive television programming conventionally such as over-the-air (as illustrated by use of the receiving antenna 103 and transmitting antenna 112), over a cable television system, or over a satellite television system (or all or any combination of these.)

A recording and playback device 104 is coupled with the television and is also coupled to receive the television. The recording and playback device, shown in high-level block diagram form in Figure 2, will be described in greater detail below.

Turning back to Figure 1, the recording and playback device 104 is coupled in communication with a server 108. In the described embodiment, the coupling is through a network 106. The recording and playback device 104 is coupled by telephonic connection to the network 106 and the server is likewise coupled by telephonic connection to the network 106. The network 106 may be the internet or some other distributed network. Other couplings between the server 108 and the network may be utilized. For example, a wireless connection may be utilized or a connection through a cable plant may be utilized.

In any event, the server 108 is coupled in communication with the recording and playback device 104 so that the server 108 may provide updated information to the recording and playback device 104 and, as will be described, the device 104 may provide information to the server 108 regarding content viewed by the viewer so that appropriate fees can be charged.

Overview of the Recording / Playback device 104

Figure 2 provides a high level block diagram overview of a recording and playback device as may be utilized by an embodiment of the present invention.

As is illustrated, the described embodiment comprises a processor 202 that provides for overall control of the operation of the device 104. The processor may be any of a number of commercially available processors or may be a special purpose processor.

Required programming to control the processor 202, as well video sequences (e.g., movies and other pay per view events as well as recorded television programs) may be recorded on recording media 203. In addition, other information such as advertisements, promotional materials, sponsorship information, and branding logos may be stored on the recording media 203. This information may be stored as graphics or video. An example of this is

illustrated by Figure 6 which illustrates a screen display 601 showing available movies 602 and a promotional graphic 603 for a selected movie.

In the described embodiment, programming to control the processor 202 may include first instructions for detecting viewer selection of a "non-viewable" video sequence, second instructions for converting the non-viewable video sequence into a viewable video sequence and third instructions for charging the viewer a fee for selection of the non-viewable video sequence. The operation of the system in accordance with an embodiment of the present invention will be described below in greater detail.

In the described embodiment, recording media 203 is a disk drive but in other embodiments may be another type of recording device and in certain embodiments more than one recording device may be utilized.

The device 104 further comprises input and output connections 204-207 allowing for communication between the device 104 and the display device 102, the antenna and/or other program source (e.g., cable, satellite) 103, the server 108 (such as over a telephonic connection to a network 106 as illustrated) and to a user input/output device such as a remote or keyboard. In certain embodiments, communication with the server may take place over the same connection(s) as used for the program source 103.

A remote control device 501 that may communicate over connection 206 is illustrated in greater detail with reference to Figure 5. The remote control device 501 of the described embodiment includes buttons allowing for

selection of items from a menu 502 including arrows for moving a cursor or highlighter on a screen and a select button. These may be used to select one of the various movies 602 on display 601.

It should be noted that certain details are omitted from Figure 2 such as read-only memory and encoders and decoders. However, such details will be apparent to one skilled in the art.

Content On Demand

Turning now to Figures 3 and 4, a method for delivery and playback of content or video sequences is described. A typical video sequence is shown illustratively by Figure 3.

In the described embodiment, non-viewable content is initially delivered to the device 104, step 401. In the present application, the term "non-viewable" content means content which is not practically viewable by the user unless the user agrees (either explicitly in response to prompts or the like) or implicitly (such as pursuant to a subscriber agreement) to pay a fee for viewing the content.

In certain embodiments, the content may be encrypted to prevent viewing. The encryption may be accomplished using any of a number of known encryption techniques.

In other embodiments, the content may be delivered and stored out of sequence. For example, the last third of a movie may be transmitted first, the first part second and the middle part third.

In other embodiments, the content may be transmitted in a corrupted format.

Thus, in all three of these embodiments, viewers who attempt to view the programming either while it is being transmitted or after it has been recorded will, as a practical matter, be prevented from viewing the content.

In still other embodiments, the content may simply be transmitted and stored on recording media 203 but the device 104 may enforce rules that only allow viewing of the content when the viewer agrees (again either implicitly or explicitly) to pay for viewing the content. Such an embodiment is relatively simple to implement as it does not require use of encryption or the like. However, one drawback to this embodiment is that a viewer watching the content as it is being transmitted will be able to watch the content without fee. The content may be transmitted, for example, late at night to minimize the number of viewers watching the content without paying the required fee.

Advantageously, the non-viewable content is delivered to the device 104 prior to a request for viewing of the content being made by the viewer. Thus, the non-viewable content may be delivered during periods of time when bandwidth is economically available (e.g. during night hours) and the content

is available locally at the device 104 when the viewer wishes to view the content.

The non-viewable content may be transmitted over any of a number of transmission media, including for example, cable, satellite, over-the-air or a networked or telephonic infrastructure.

The non-viewable content is stored on a storage media 203, step 403. Advantageously, in the described embodiment, the device 104 may be configured to select only certain content for recording in order to efficiently utilize available space on storage media 203. For example, the viewer may have configured the device 104 to record all movies starring a given actor or actress, or all movies of a certain type (e.g., action, romance, etc.), all movies directed by a given director, or all movies that have won a give award (e.g., Oscar), all movies that have achieved a certain level of review by critiques (e.g., all "two thumbs up movies"), etc. In the case of sporting events, the viewer may configure the device 104 to record all games with a given team playing (all 49'rs games), all championship games, etc. Thus, unlike embodiments such as described in the '582 patent that require storage of hundreds of titles because of diverse interests of hundreds or thousands of viewers who may access the system, the described embodiment requires storage only for titles of interest of the viewer while still allowing for transmission of hundreds of titles (dependent on bandwidth availability) to provide titles of interests to thousands, if not millions, of potential viewers.

The viewer selects a program for viewing, step 405. For example, in the described embodiment, the viewer may select one of the various movies that have been stored on the storage media 203 by, for example, using the remote control 501 to select a program title on display 601. In many cases, the selected content has already been completely transmitted and stored on device 104 at the time it is selected for viewing. However, in certain embodiments, the viewer may be allowed to select a program which is still be transmitted and view the program as it is being transmitted. This type of implementation may have particular application for events, such as sporting events, which benefit from real-time viewing.

After selection by the viewer, the non-viewable content is converted to viewable content, step 407. For example, encrypted content may be decrypted, scrambled or corrupted content may be descrambled, and content that is transmitted out of order may be viewed in order. The content is then displayed on display device 102, step 409.

Finally, the viewer is charged a fee for viewing the content. The fee may vary dependent on the content (e.g., first run movies may be more expensive than second run movies). In the described embodiment, information on what content has been viewed is communicated to server 108 through network 106 and the viewer is sent periodic statements for billing purposes.

In one alternative embodiment, the viewer is given the opportunity to view a first portion of the content without charge. For example, the viewer may be allowed to view the first ten minutes of a movie (or even the first half or more) without charge. A fee is charged for viewing the remaining portion of the content. In such an embodiment, a viewer is enticed to start viewing the movie because there is no charge for doing so but, assuming the movie is of interest, will incur the fee in order to complete viewing of the movie. In this embodiment, the viewer may be informed prior to viewing the content that viewing more than a first portion (e.g., 10 minutes) will result in a charge or, alternatively, the viewer may be prompted after viewing the first portion to respond whether the viewer wishes to see the remaining portion of the content and to be charged for viewing the remaining portion.

Thus, what has been described is a method and apparatus for delivering content to a viewer and charging the viewer a fee for viewing the content.

CLAIMS

What is claimed is:

1. A method comprising:

   a) delivering content to a device at a viewer's location;

   b) storing the content on a storage media on the device;

   c) accepting viewer input to select the content for viewing;

   d) responsive to the viewer input, displaying the content for viewing by the viewer and charging the viewer a fee for viewing the content.

2. The method as recited by claim 1 wherein the content is delivered in a non-viewable format and the content is processed responsive to the viewer input to provide viewable content.

3. The method as recited by claim 2 wherein the non-viewable format is an encrypted format and the content is decrypted responsive to the viewer input to provide viewable content.

4. The method as recited by claim 2 wherein the non-viewable format is a corrupted format.

5. The method as recited by claim 2 wherein the non-viewable format is an out of sequence format and the content is displayed in sequence.

6. The method as recited by claim 1 wherein the content is a movie.

7. The method as recited by claim 1 wherein the content is a sporting event.

8. The method as recited by claim 1 further comprising the step of periodically communicating between the device and a central server information regarding content viewed by the viewer and constructing billing information for the viewer based on the viewed content.

9. The method as recited by claim 1 wherein the storage media is a disk.

10. The method as recited by claim 1 wherein the storage media is a tape.

11. A video playback device comprising:

a) receiving means for receiving a non-viewable video sequence;

b) storing means storing the non-viewable video sequence;

c) input means for accepting viewer input for selection of the video sequence; and

d) processing means, responsive to the input means, for converting the non-viewable video sequence to a viewable video sequence and for charging the viewer a fee for selection of the video sequence.

12. The video playback device as recited by claim 11 wherein the non-viewable video sequence is an encrypted video sequence and the processing means decrypts the non-viewable video sequence to produce a viewable video sequence.

13. The video playback device as recited by claim 11 the non-viewable video sequence is a corrupted video sequence.

14. The video playback device as recited by claim 11 the non-viewable video sequence is an out of order video sequence and the processing means displays the video sequence in order.

15. The video playback device as recited by claim 11 wherein the receiving means comprises an input coupled to receive the video sequence from an antenna, cable or satellite.

16. The video playback device as recited by claim 11 wherein the storage means is selected from one of a disk or a tape.

17. The video playback device as recited by claim 11 wherein input means comprises a remote control.

18. The video playback device as recited by claim 17 wherein the processor means comprises a processor programmed to convert the non-viewable video sequence to a viewable video sequence.

19. A video playback device comprising:

a) a random access storage media having stored thereon a non-viewable video sequence;

b) a processor;

c) a stored program for controlling the processor, the stored program including first instructions for detecting viewer selection of the non-viewable video sequence, second instructions for converting the non-viewable video sequence to a viewable video sequence responsive to detecting viewer selection of the non-viewable video sequence and third instructions for charging the viewer a fee for selection of the non-viewable video sequence.

20. A video playback device comprising:

a) a random access storage media having stored thereon a video sequence;

b) a processor;

c) a stored program for controlling the processor, the stored program including first instructions for detecting viewer selection of the video sequence, second instructions for charging the viewer a fee for selection of the video sequence.

21. A method comprising:

a) delivering content to a device at a viewer's location;

b) storing the content on a storage media on the device;

c) accepting viewer input to select the content for viewing;

d) responsive to the viewer input, displaying the content for viewing by the viewer, allowing the viewer to view a first portion of the content without charge and and charging the viewer a fee for viewing a second portion of the content.

NETWORK
106
SERVER
108
TRANSMITTING
ATTENNA
112
DISPLAY DEVICE
102
RECEIVING
ANTENNA
103
ReplayZones
Network Zone
Sports Zone
Movie Zone
Hobby Zone
Family Zone
Actor Zone
Information Zone
Build Your Own Zone
The MovieZone
The Lost World
RECORDING / PLAYBACK DEVICE
104

FIGURE 1

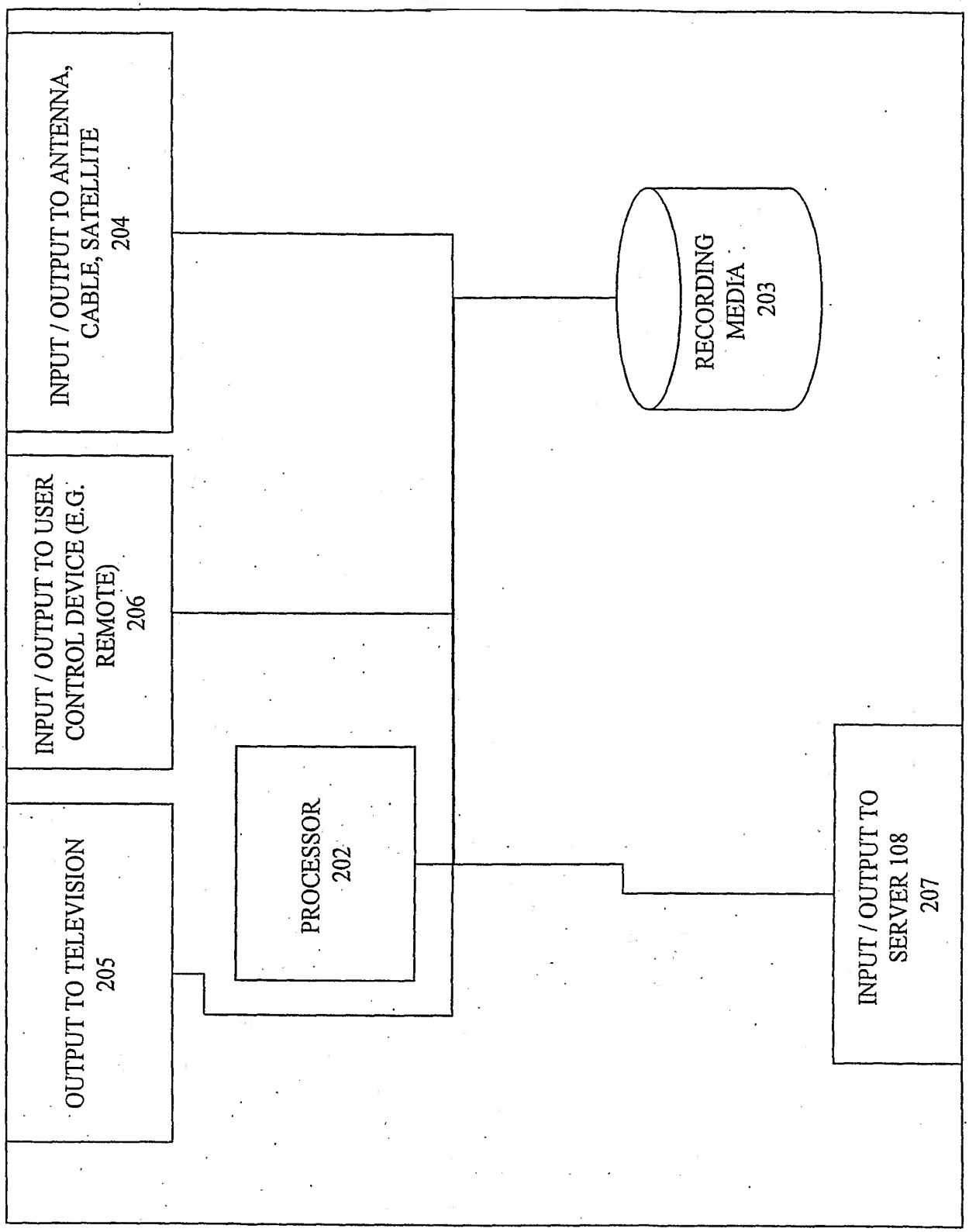
INPUT / OUTPUT TO ANTENNA, CABLE, SATELLITE 204
INPUT / OUTPUT TO USER CONTROL DEVICE (E.G. REMOTE) 206
OUTPUT TO TELEVISION 205
PROCESSOR 202
RECORDING MEDIA 203
INPUT / OUTPUT TO SERVER 108 207
RECORDING / PLAYBACK DEVICE 104

FIGURE 2

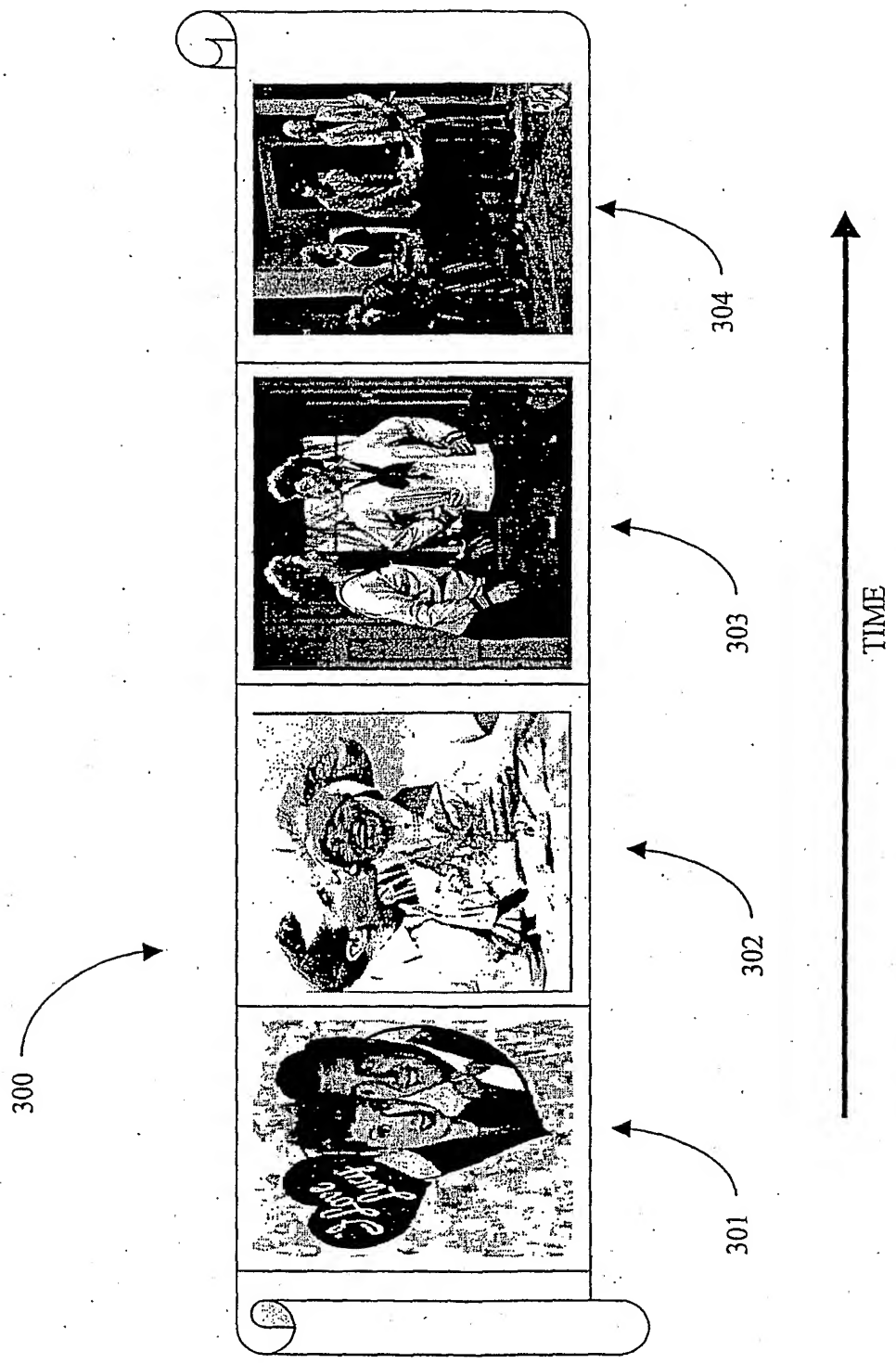

FIGURE 3

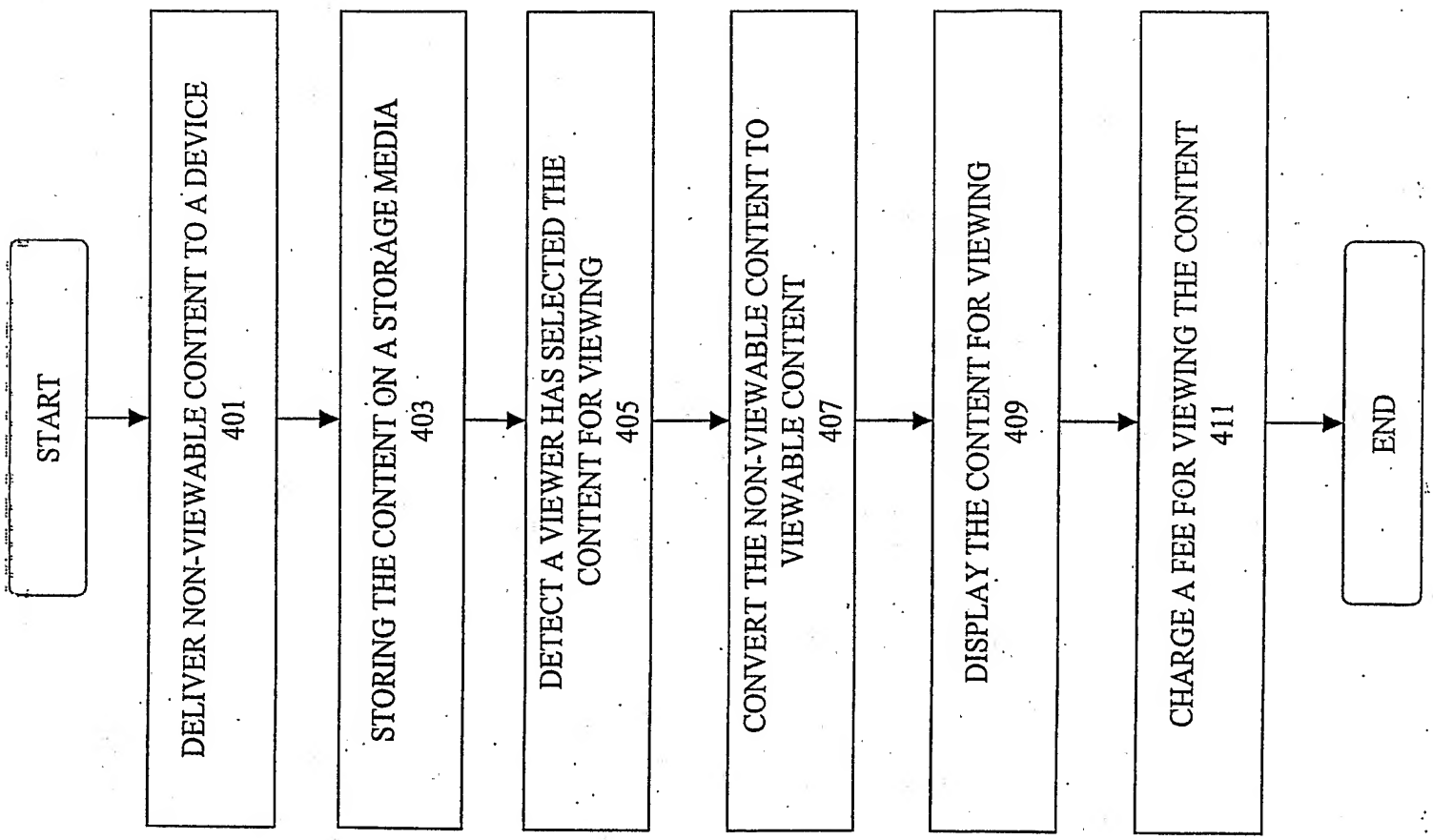
START
DELIVER NON-VIEWABLE CONTENT TO A DEVICE
401
STORING THE CONTENT ON A STORAGE MEDIA
403
DETECT A VIEWER HAS SELECTED THE CONTENT FOR VIEWING
405
CONVERT THE NON-VIEWABLE CONTENT TO VIEWABLE CONTENT
407
DISPLAY THE CONTENT FOR VIEWING
409
CHARGE A FEE FOR VIEWING THE CONTENT
411
END

FIGURE 4

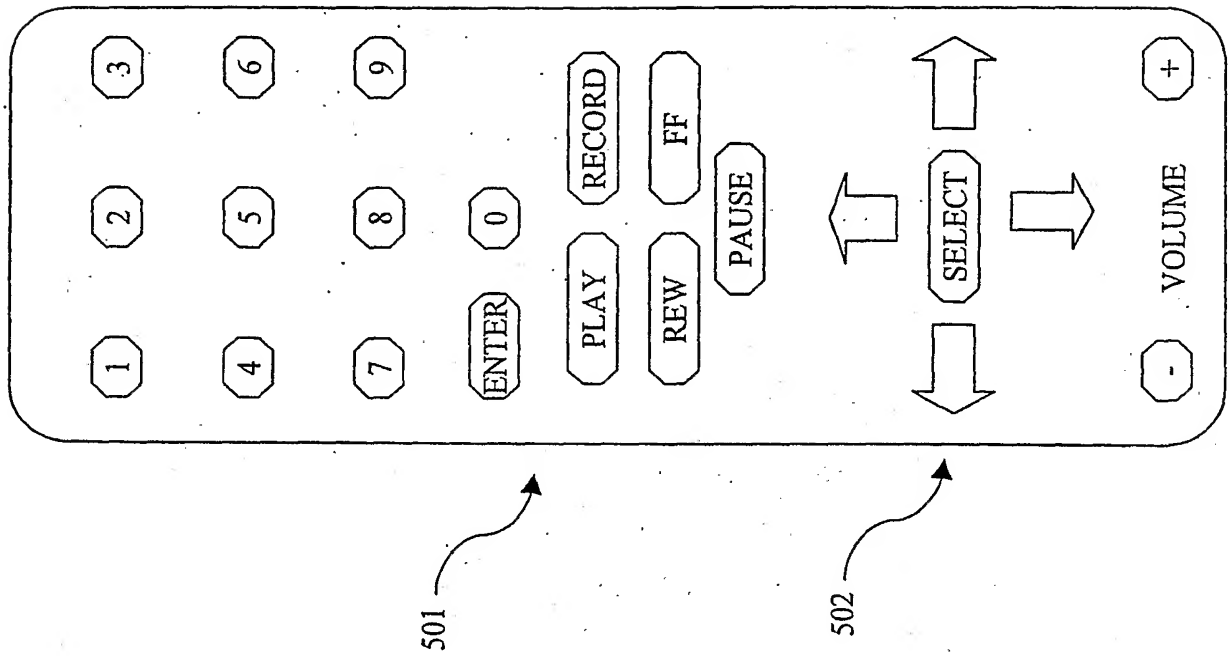
1
2
3
4
5
6
7
8
9
ENTER
0
PLAY
RECORD
REW
FF
PAUSE
SELECT
-
VOLUME
+
501
502

FIGURE 5

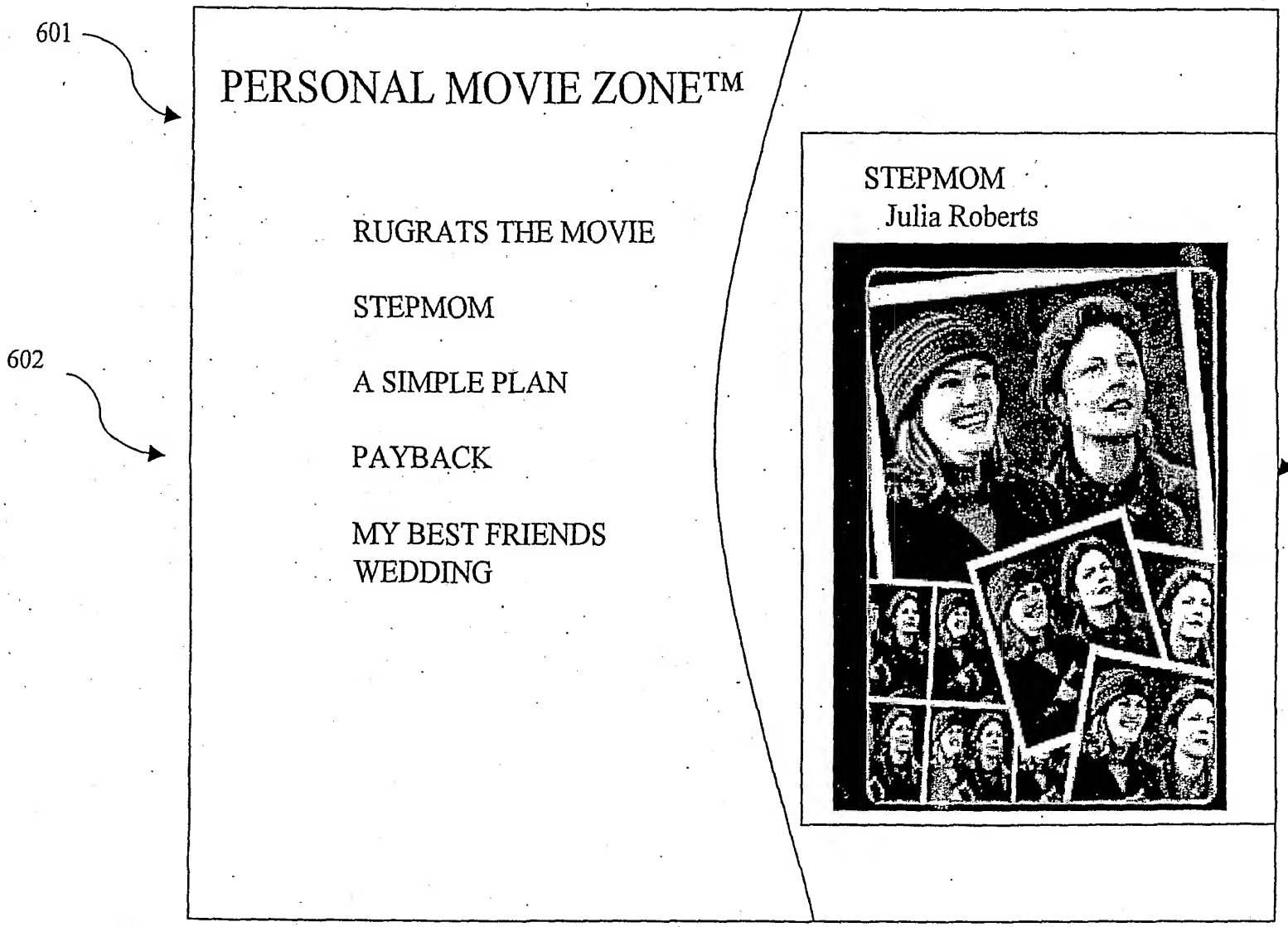
601
PERSONAL MOVIE ZONE™
RUGRATS THE MOVIE
STEPMOM
A SIMPLE PLAN
PAYBACK
MY BEST FRIENDS WEDDING
602
602
STEPMOM
Julia Roberts

FIGURE 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/13753

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04N 7/173
US CL : 725/87, 89, 91, 100, 104, 141

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 725/87, 89, 91, 100, 104, 141

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,729,549 A (KOSTRESKI et al.) 17 March 1998 (17.03.1998), see whole document.	1-21
Y	US 6,002,393 A (HITE et al.) 14 December 1999 (14.12.1999), see column 1, line 55 to column 6, line 15.	1-21
Y	US 6,029,046 A (KHAN et al.) 22 February 2000 (22.02.2000), see column 2, line 50 to column 3, line 25.	1-21

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 November 2003 (20.11.2003)	18 DEC 2003
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer KRISTA K. BUI Telephone No. 703-305-0095

Form PCT/ISA/210 (second sheet) (July 1998)

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I claim(s) 1-10, drawn to a user requested video program system.

Group II, claim(s) 11-20, drawn to a video playback device.

Continuation of B. FIELDS SEARCHED Item 3:

EAST.

Search terms: video playback, video on demand, VOD, NVOD, cable, satellite, antenna, storage, memory, encryption/decryption, encrypted/decrypted, content, fee, charge, billing, remote, video sequence, streaming, corrupted format, server, database, portable, wireless, terminal, device, apparatus, and processor.